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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,653	08/19/2003	Joshua D. Posamentier	42.P16446X	5253

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Jan Carol Little
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Seventh Floor
12400 Wilshire Boulevard
Los Angeles, CA 90025-1026

EXAMINER	
VAN ROY, TOD THOMAS	
ART UNIT	**PAPER NUMBER**
2828	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/643,653	POSAMENTIER, JOSHUA D.	
	Examiner	Art Unit	
	Tod T. Van Roy	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8,10-13 and 17-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8,10-13 and 17-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The examiner acknowledges the amending of claims 8 and 17, as well as the cancellation of claims 1-7, 9, and 14-16.

Claim Objections

Claim 10 is objected to because of the following informalities: Claim 10 currently depends from cancelled claim 9. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 17 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 17, as amended, describes the photodiode having a first node coupled to a voltage source. This voltage source is not found in fig.3, and is not found to be described in the specification.

Response to Arguments

Applicant's arguments with respect to claims 8 and 17 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed 03/16/2007 have been fully considered but they are not persuasive.

With respect to claims 8 and 17, upon further consideration the Examiner has taken the meaning of "connected" to describe something "joined or linked together" or "to join or fasten together usually by something intervening" (see Merriam-Webster's Collegiate Dictionary 10th Edition, 'connected' and 'connect'). Using this interpretation, the previously cited art of Fukushima continues to read on the claimed limitations. The Examiner is aware that Fukushima would not correctly read on the claimed limitations if they were to read: "*directly* connected".

The Examiner cautions the Applicant that if the "directly connected" change is made that the node description currently found in claim 17 may need revision. According to the claim as currently written, the 2nd node of the thermistor is connected to the 2nd node of the photodiode, and also to the input of the integrator. As the language at this point is "coupled", no problems are present if read broadly. If the "direct" limitation were added, without other modifications to the claim, then fig.3 would not seem to fit the claim as a whole.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima (US 4876442) in view of Hirano (US 5519720).

With respect to claim 8, Fukushima teaches a laser to emit an optical beam (fig.1 #3), a photodiode coupled to receive the optical beam from the laser (fig.1 #4) and to convert the optical beam to a current (col.1 lines 62-63); circuitry coupled to receive the current from the photodiode (fig.1 #5), the circuitry to adjust an amount of light output by the diode in response to a change in temperature (due to the thermistor), the circuitry including: a first resistor (fig.1 #52) having a first terminal and a second terminal, the first terminal coupled to receive the current from the photodiode; a thermistor (fig.1 #50) having a first terminal connected to the first terminal of the first resistor and a second terminal coupled to the second terminal of the first resistor (through ground); and a

second resistor (fig.1 #51) having a first terminal and a second terminal, the first terminal coupled to the second terminal of the first resistor (through ground) and connected to the second terminal of the thermistor, wherein current through the thermistor is to adjust in response to a change in temperature. Fukushima does not teach the use of an optical fiber, or to adjust for changes in the tracking. Fukushima also does not teach the use of a third resistor (which would be in parallel to the 1st resistor to have the desired terminal locations). Hirano teaches a semiconductor laser device which uses a fiber (which would inherently be affected differently by a temperature change when compared with the laser diode due to the differing materials), and adjusts for tracking problems (col.4 lines 43-67). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the laser emitter of Fukushima with the fiber of Hirano in order to facilitate the transfer of information, as well as to adjust for tracking errors as is done by Hirano in order to couple the maximum amount of light possible into the fiber for optimal transmission. It would also be obvious to add a third resistor in parallel with the first resistor (accounting for the given terminal locations) as it is well known in the art that a resistance value can be split between two resistors in parallel or vice versa.

Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima in view of Hirano and further in view of Queniat et al. (US 5383208).

With respect to claim 10, Fukushima and Hirano teach the apparatus as outlined in the rejection to claim 9 above, including the second circuitry having a current gain

device (Fukushima, fig.1 #61 op amp) having a first and second input, where a second input is coupled to the thermistor network. Fukushima and Hirano do not teach the first input of the gain device to be coupled to a digital to analog converter. Queniat teaches a device for controlling laser diodes wherein a digital to analog converter is used (Queniat, fig.6 #161). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the current gain device input of Fukushima and Hirano with the digital to analog converter of Queniat in order to allow for the input of a control signal from a digital controller (Queniat, col.4 lines 57-65) in place of a fixed reference voltage based on Fukushima's fig.1 Vref value.

With respect to claim 11, Fukushima further teaches a thermistor (fig.1 #50, negative temp coefficient col.3 line 66).

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima in view of Hirano and further in view of Queniat and Ouchi et al. (US 6055251).

With respect to claim 12, Fukushima, Hirano, and Queniat teach the laser apparatus as outlined in the rejection to claim 10, including the diode laser to be un-cooled (no cooling taught by Fukushima), but do not specify the semiconductor laser to be a distributed feedback laser. Ouchi teaches a semiconductor laser feedback system wherein a distributed feedback laser is used (col.7 lines 40-45). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the laser apparatus of Fukushima, Hirano and Queniat with the distributed feedback laser of

Ouchi in order to obtain a single mode (Ouchi, col.1 lines 31-34) to allow for proper coupling to a fiber waveguide.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima in view of Hirano and further in view of Queniat and Gilliland.

With respect to claim 13, Fukushima, Hirano and Queniat teach the laser apparatus as outlined in the rejection to claim 10, including the diode laser to be un-cooled (no cooling taught by Fukushima), but do not specify the semiconductor laser to be a VCSEL. Gilliland teaches a vertical cavity surface emitting laser (VCSEL) system using a feedback apparatus. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the laser apparatus of Fukushima, Hirano and Queniat with the VCSEL of Gilliland in order to allow for easier coupling to fiber optic waveguides due to the VCSEL's low beam divergence.

Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima in view of Hirano and Queniat and Killian (US 6327277).

With respect to claims 17 and 20, Fukushima teaches a laser to emit an optical beam (fig.1 #3), the laser having at least one input and at least one output, a photodiode (fig.1 #4) having an input coupled to one output of the laser, the photodiode to convert the optical beam to a current (col.1 lines 62-63), the photodiode having a first node coupled to a voltage source (fig.1 –V), a first resistor (fig.1 #52) having a first node (top of device) coupled to a second node of the photodiode (bottom of the device), a

thermistor (fig.1 #50) having a first node (top of device) coupled to the first node of the first resistor and a second node connected to the second node of the photodiode, and a current gain device (fig.1 #76, BJT) having an input coupled to an output of the op-amp (fig.1 #61). Fukushima does not teach the use of a digital to analog converter having an output coupled to the current gain device, or an integrator having an input coupled to the thermistor and resistor as well as an output coupled to the digital to analog converter. Fukushima also does not teach the use of an optical fiber. Hirano teaches a semiconductor laser device which uses a fiber, and adjusts for tracking problems (col.4 lines 43-67). Queniat teaches a device for controlling laser diodes wherein a digital to analog converter is used (Queniat, fig.6 #161). Killian teaches the use of an integrator in a temperature compensation system (fig.5). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the laser emitter of Fukushima with the fiber of Hirano in order to facilitate the transfer of information, as well as to adjust for tracking errors as is done by Hirano in order to couple the maximum amount of light possible into the fiber for optimal transmission (amount of light coupled will vary as the photodiode feedback increases the driving current, inherently affecting the fiber and the laser differently as the materials of the laser and fiber differ, therefor the temperature change would affect each differently), as well as to combine the op-amp input of Fukushima with the digital to analog converter of Queniat in order to allow for the input of a control signal from a digital controller (Queniat, col.4 lines 57-65) in place of a fixed reference voltage based on Fukushima's fig.1 Vref value, as well as the integrator coupled to the thermistor/resistor output in order to use a cumulative

feedback value rather than instantaneous (Killian, col.3 lines 54-58) avoiding unnecessarily large swings in value (thus the given circuit placement limitations would be met as the DAC output would be coupled to the current gain input through the op-amp, and the integrator output would be coupled to the DAC through the op-amp).

With respect to claim 18, Fukushima further teaches the thermistor to have a negative temperature coefficient (col.3 lines 66-67).

With respect to claim 19, Fukushima, Queniat and Killian do not teach the integrator, DAC, and current gain device to be located on the same chip. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine these elements onto one chip in order to reduce the footprint of the overall circuit as is well known and widely practiced in the art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TVR

WIMSUN CHI HARVEY
PRIMARY EXAMINER